

# DEPARTMENT OF EDUCATION-FSA FMS INTEGRATION PARTNER INTERFACE FUNCTIONAL DESIGN



## FMS FP DATAMART INTERFACE IMPACT TO 149 – FORM 2000 SYSTEM ENHANCEMENTS

Author: Nick Villamizar  
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Subject: FMS FP DataMart Interface Impact Functional Design	
TO 149 – Form 2000 System Enhancements Release II	
Prepared by: Nick Villamizar	Date: November 12, 2003
Version: 1.0	

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## Document Change Control

Date	Author	Version	Change Reference
10/23/2003	Nick Villamizar	1.0	Initial Creation

## Approval

<b>Created By:</b>	Nick Villamizar	202-962-0617	<b>Creation Date:</b> 10/23/2003
<b>Project Lead Sign Off:</b>	Joanna Zieba	312-693-3414	<b>Sign Off Date:</b> 11/12/2003
<b>FSA Representative Sign Off:</b>	Jay Hurt	202-377-3453	<b>Sign Off Date:</b>



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## Specification

<b>Program Name:</b>	FMS Form 2000 FP DataMart Interface Impact
<b>Functional Design Document ID &amp; Title:</b>	FORM2000_FP_DATAMART_INT_FD.doc
<b>Application:</b>	FMS Monthly Form 2000 FMS Monthly/Quarterly Form 2000
<b>Priority:</b>	High
<b>Estimated Production Date:</b>	April 2003
<b>Other Affected Applications:</b>	FP DataMart
<b>Comments:</b>	



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## General Requirements

### Business Objective:

As part of TO 149, FMS has been tasked with modifying the FMS Form 2000 Monthly and Monthly/Quarterly forms. The modification includes the transfer of fields MR-24, MR-25, and MR-26 from the Monthly/Quarterly form to the Monthly form. The objective of this modification is to consolidate all non-accounting events to the Monthly form. The removal of fields MR-24, MR-25, and MR-26 from the Monthly/Quarterly form will assist auditors by only containing accounting events.

The objective of this design is to identify which aspects of the FMS FP DataMart Interface and FP DataMart System are impacted by the changes to the FMS Form 2000 Monthly and Monthly/Quarterly forms.

### Component Description:

1. To fulfill the business objective stated above, the FFELGA\_MONTHLY\_REPORTS table will be altered to include fields MR-24\_P, MR-24\_I, MR-24\_O, MR-25\_P, MR-25\_I, MR-25\_O, MR-26\_I, and MR-26\_O. The columns will be created using the same data type and field size as the existing columns in the Monthly/Quarterly table, FFELGA\_MONQUART\_REPORTS.
2. Currently, in the FP DataMart Interface, the SR\_FFELGA\_MONQUART\_REPORTS table pulls data corresponding to fields MR-24, MR-25 and MR-26 from the FFELGA\_MONQUART\_REPORTS table. Once the enhancements have taken place, the SR\_FFELGA\_MONTHLY\_REPORTS table will pull data for fields MR-24, MR-25 and MR-26 from the FFELGA\_MONTHLY\_REPORTS. The source and \_PRV tables, SR\_FFELGA\_MONTHLY\_REPORTS and SR\_FFELGA\_MONTHLY\_REPORTS\_PRV, will be altered to include fields MR-24\_P, MR-24\_I, MR-24\_O, MR-25\_P, MR-25\_I, MR-25\_O, MR-26\_I, and MR-26\_O.
3. There will be two Informatica session mappings that will be modified in the FP DataMart system. These adjustments will account for the addition of fields MR\_24, MR\_25, and MR\_26 to the FFELGA\_MONTHLY\_REPORTS table. The mapping, m\_Load\_F\_FM2000\_MNTH, will be modified in order to correctly load the fact table, F\_FM2000\_MNTH. Also, to accurately transfer data from the source tables to their corresponding \_PRV tables, the mapping, m\_Load\_SR\_to\_PRV, will be altered. This mapping is run at the end of the BATCH\_LOAD\_FMS batch.
4. Due to the addition of fields MR-24, MR-25, MR-26 to the FFELGA\_MONTHLY\_REPORTS table, in order for the Informatica sessions to properly load the data, records will be added to the following table, LKP\_FM2000\_LINE\_ITEM. This adjustment will allow the MR\_24, MR\_25, and MR\_26 record types to load without error. Twelve lines in total will be added to this table. (four for each MR type)
5. Even though the MR-24, MR-25, and MR- 26 fields will be moved from the Monthly/Quarterly form to the Monthly form, the respective fields will not be removed from the Monthly/Quarterly Reports table. As a result, MR-24\_P, MR-24\_I, MR-24\_O, MR-25\_P, MR-25\_I, MR-25\_O, MR-26\_I, and MR-26\_O can remain in the FP DataMart Monthly/Quarterly source and fact tables without any impact to the interface or reporting.
6. A direct Oracle database link through the FSA FMS FP DataMart Data Transfer Program is automatically run every 14 days from the FMS database to the FP DataMart database (HPV2). All of the columns are queried from the FFELGA\_MONTHLY\_REPORTS table of FMS into the source table SR\_FFELGA\_MONTHLY\_REPORTS in the HPV2 database. Once the source tables are populated, the Informatica program takes the newly imported data



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and populates the F\_FM2000\_MNTH fact table within HPV2. Once the fact table is updated, users are able to run reports through MicroStrategy.

**Component Risks:**

None

**Development Complexity:**

Low

**Security Concerns:**

None

**Assumptions:**

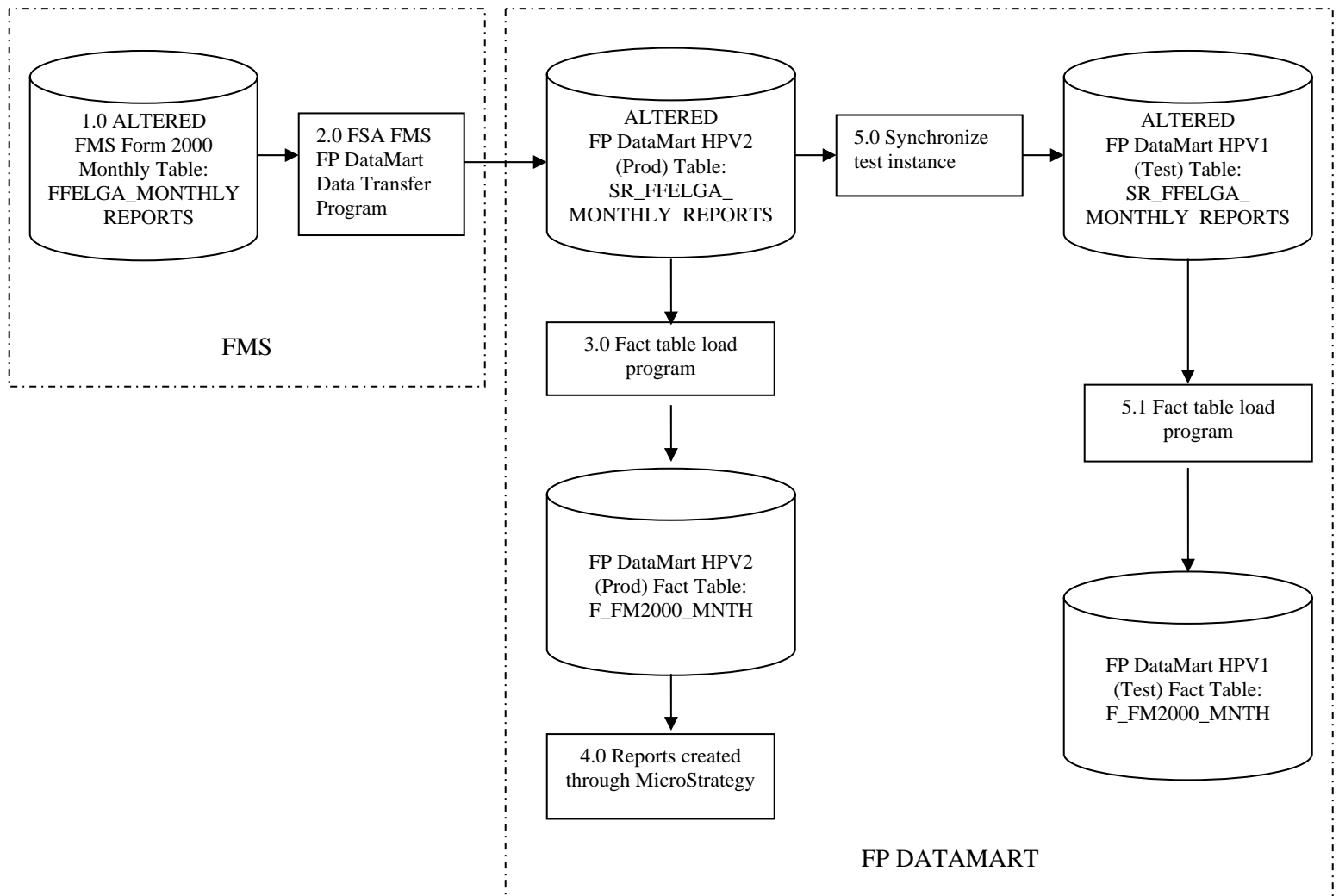
1. The FSA FP DataMart Data Transfer Program queries all columns from the Oracle FFELGA\_MONTHLY\_REPORTS table into the custom FP DataMart table, SR\_FFELGA\_MONTHLY\_REPORTS; no code change to the Transfer Program will be necessary.
2. The FPDataMart table, F\_FM2000\_MNTH, is populated with data from SR\_FFELGA\_MONTHLY\_REPORTS by the Informatica Tool; the FP DataMart team will update the Informatica processing by modifying the mappings, m\_Load\_F\_FM2000\_MNTH and m\_Load\_SR\_to\_PRV, accordingly.
3. The DataMart Operations Team will update the tables, SR\_FFELGA\_MONTHLY\_REPORTS and SR\_FFELGA\_MONTHLY\_REPORTS\_PRV, in both the production environment and the test environment. Integration testing will be done between the FMS Form 2000 and FP DataMart teams.
4. None of the existing FP DataMart MicroStrategy Reports will be affected by the Monthly/Quarterly Form Reconfiguration; the only queries that reference the affected fields in the Monthly/Quarterly table are custom developed by the users (i.e. PowerUsers). All users will be notified by the DataMart Operations team of the change in tables and will be assisted by the Operation team with changes to custom queries.
5. The FP DataMart tables, SR\_FFELGA\_MONTHLY\_REPORTS and SR\_FFELGA\_MONTHLY\_REPORTS\_PRV, will have the added fields for MR-24, MR-25, and MR-26 with the same data type and field sizes as the existing Monthly/Quarterly table.
6. As part of the Monthly/Quarterly Form Reconfiguration Conversion, data from the Monthly /Quarterly table for MR-24, MR-25 and MR-26 will transfer to the Monthly table. Since the relationship between the tables is not 1:1, the Monthly Form will be modified to display NULL values for MR-24, MR-25 and MR-26 when no data is available for those fields.
7. The FP DataMart table, LKP\_FM2000\_LINE\_ITEM, will add the necessary records in order to allow the MR-24, MR-25, MR-26 record types to load without error. Twelve lines will be added in total by the FP DataMart team.



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## Design

### Process Flow Diagram:





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### Detailed Description of New/Changes to Existing Program:

- 1.0 The FMS Form 2000 Monthly table, FFELGA\_MONTHLY\_REPORTS, will be altered to include columns for MR-24, MR-25, MR-26 (Requirement 4.1). The definition of each column will be identical to the existing columns in the FFELGA\_MONQUART\_REPORTS table. The following columns will need to be created for each item number:
- MR-24
    - Principal Amount (MR24\_P)
    - Interest Amount (MR24\_I)
    - Other Amount (MR24\_O)
  - MR-25
    - Principal Amount (MR25\_P)
    - Interest Amount (MR25\_I)
    - Other Amount (MR25\_O)
  - MR-26
    - Interest Amount (MR26\_I)
    - Other Amount (MR26\_O)
- 2.0 The transfer of data from FMS Form 2000 to FP DataMart occurs every 14 days through the FSA FMS FP DataMart Data Transfer Program. A direct data link transfers data from the FMS database to the FP DataMart database (HPV2).
- a. All fields from the FFELGA\_MONTHLY\_REPORTS are passed into the SR\_FFELGA\_MONTHLY\_REPORTS table in HPV2.
  - b. All 8 fields corresponding to MR-24, MR-25, and MR-26 will be populated in the SR\_FFELGA\_MONTHLY\_REPORTS table. The SR\_FFELGA\_MONTHLY\_REPORTS table and SR\_FFELGA\_MONTHLY\_REPORTS\_PRV tables will both be altered to include these new fields.
- 3.0 After the initial load of information into the SR\_FFELGA\_MONTHLY\_REPORTS table, the data will be automatically exported from the source table to the fact table, F\_FM2000\_MNTH, using the Informatica tool.
- 4.0 After the fact table F\_FM2000\_MNTH in HPV2 is populated through Informatica, the SR\_FFELGA\_MONTHLY\_REPORTS table is truncated and users are able to generate reports from the F\_FM2000\_MNTH table via MicroStrategy.
- 5.0 Synchronize test instance. A query is manually executed every 14 days to insert all data from the SR\_FFELGA\_MONTHLY\_REPORTS table from the production database (HPV2) into the SR\_FFELGA\_MONTHLY\_REPORTS table in the test database (HPV1).
- 5.1 Once the SR\_FFELGA\_MONTHLY\_REPORTS table in HPV1 is loaded, Informatica compares the historical data and populates only the incremental changes to the fact table (F\_FM2000\_MNTH) in HPV1.

### Menu:

N/A





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### Database Objects: FP Datamart Objects

Database Object Name	Object Type	Oracle Application	Comments
SR_FFELGA_ MONTHLY_REPORTS	Table	FP DataMart	Fields MR-24_P, MR-24_I, MR-24_O, MR-25_P, MR-25_I, MR-25_O, MR-26_I, and MR-24_O will be added to the table.
SR_FFELGA_ MONTHLY_REPORTS _PRV	Table	FP DataMart	Fields MR-24_P, MR-24_I, MR-24_O, MR-25_P, MR-25_I, MR-25_O, MR-26_I, and MR-24_O will be added to the table.

## Dependencies

### Dependencies on Other RICE Components:

The Monthly/Quarterly Form Reconfiguration Conversion must be migrated and executed in Production before the FP DataMart interface is run in Production.

### Dependencies on Other Business Components:

None.

### Design Constraints:

None.

### Performance Considerations:

None.

### Implementation Considerations:

None.

### Other Dependencies/Special Concerns:

None.



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## Error Handling

Potential Errors	Possible Reasons	Solution Strategy

## Testing Requirements

Requirements Matrix Reference	Test Condition	Expected Results
4.1	Validate that the FP DataMart tables, SR_FFELGA_MONTHLY_REPORTS and SR_FFELGA_MONTHLY_REPORTS_PRV, contain the correct additional fields for MR-24, MR-25, and MR-26.	All MR-24, MR-25, MR-26 fields exist with the appropriate type and size.
4.1	Validate that the data from the Monthly table, FFELGA_MONTHLY_REPORTS, successfully populates the source and fact tables in FP DataMart, SR_FFELGA_MONTHLY_REPORTS and F_FM2000_MNTH	Data is populated as expected with values for MR-24, MR-25, and MR-26 for all records, with the exception of quarterly records that do not have a corresponding monthly record in the table.
4.1	Validate that the data from the Monthly/Quarterly table, FFELGA_MONQUART_REPORTS, successfully populates the source and fact tables in FP DataMart, SR_FFELGA_MONQUART_REPORTS and F_FM2000_MNTH_QTR.	Data is populated as expected with null values for MR-24, MR-25, and MR-26.
4.1	Validate that the data transfer from the Annual table, FFELGA_ANNUAL_REPORTS to SR_FFELGA_ANNUAL_REPORTS was not affected by the Monthly/Quarterly Report changes.	Data is populated as expected into the SR_FFELGA_ANNUAL_REPORTS table from the FFELGA_ANNUAL_REPORTS table.
	Validate that the reports run in MicroStrategy referencing MR-25, MR-25, and MR-26 pull the correct data when executed	All MicroStrategy reports pull correct data for MR-24, MR-25, and MR-26 from the fact table, F_FM2000_MNTH

## Issues and Additional Considerations

The following Issues were defined during Functional Design:

Issue	Raised By / Date Needed	Resolution/Answer	Resolved By / Date Completed